

SCIENCE SEEKS SECRET OF MARS

Star Sleuths Prepare to Solve
Mystery When Planet Is
Nearest in 1924.

MANY THEORIES ADVANCED

Scientific Eyes to Strain at Telescopes
and Wireless to Be Tried to Read
Sky Secret—Chilean
Venture Denied.

New York.—The secret of Mars may be read in 1924 when the red planet makes its closest approach to earth, although astronomers are skeptical of the theory of Marconi that the Martians are signalling us by wireless, and take no stock in the 60-foot whirling dish of quicksilver which it is promised will magnify the power of vision to 25,000,000 times its normal strength.

In 1824 Mars will come within about 55,000,000 miles of the earth. Because of its eccentric orbit, compared to the more nearly circular one of the earth, Mars approaches that close only once in fifteen years.

In 1924 observatories will be much better equipped to study Mars than they were in 1909, when the planet last appeared at its biggest and reddest in our sky. In 1924 Mars will be the cynosure of telescopes all over the earth. The 100-inch Hooker telescope at Mt. Wilson, and the marvelous instruments and methods for analyzing light which are in use there, may definitely solve the question whether Mars is inhabited.

As the distance of Mars from the earth varies from 35,000,000 to 284,000,000 miles, the wireless signals from that planet, if there are any, will have a better chance to register in 1924 over the comparatively brief span of 35,000,000 miles.

Those "Signals" From Mars.
For the last 20 years Mars has been reported frequently to be attempting to signal to us by wireless rays, by flashes of light, and even, according to some imaginative speculators, by writing sign messages of planet-wide size over the latitudes by means of the Mars canal system. It has even been suggested that we acknowledge receipt by forming words in vegetation over the blank of the Sahara desert.

The Marconi wireless communication theory is more plausible than any of the others, because that great inventor reports that he has picked up wireless waves 100 miles long, while the greatest produced on earth by artificial means are about ten miles long. Many ways of explaining this have occurred to skeptics, but the Marconi signals have more in them to interest conservative scientists than any of the previous types.

There was a sensation in 1900 when it was reported that signaling from Mars had been detected at the Lowell observatory at Flagstaff, Ariz. This was based on a misunderstanding of a telegraph message concerning some projected lights over the rim of Mars. Instead of presenting a perfect outline, Mars showed slight excrescences of light. These were calculated to be from 17 to 30 miles above the surface of the planet.

Similar Projections From Moon.
Similar isolated projections of light had been seen on the moon, but this was easily discovered to be the sunlight tipping the mountain tops, an effect visible on earth in mountainous country when the rising sun glides the summits when the lower parts of the mountains and the valleys are still in darkness.

But Mars has no mountains, according to general agreement among observers. It was believed also to be almost cloudless. The occasional high lights, however, are now agreed to have been clouds which are thought to occur, though somewhat rarely.

Electric currents which apparently wander through eternity hit the earth here and there, causing a mysterious hissing and crackling in wireless apparatus and sometimes upsetting human electrical contrivances, as the great magnetic storm of last May did on an unprecedented scale. Such currents, called "strays" or "atmospherics," have been occasionally interpreted as signals from Mars, when they came with a regularity that seemed to be directed by a human intelligence. But they have been shown most unmistakably to be connected with sun spots.

The scheme, attributed to D. David Todd of Amherst, a well-known astronomer, of using a great abandoned mine shaft in Chile for the making of a colossal telescope, has been the subject of no little scientific discussion. This shaft, which is said to have a 60-foot diameter, is located near the equator. It is, therefore, in the plane on which the earth and all the other planets whirl round the sun. The shaft telescope has the disadvantage that it could never be shifted, and could only be used for that part of the heavens which passes over it. But it is calculated that Mars will pass directly over it when it becomes a big red disk in 1924.

Many Astronomers Scoff.
Many astronomers have scoffed at the theory of such a colossal telescope, alleging that if the mechanical difficulties could be overcome the enormous magnification sought would be useless, because the observer would see nothing but a blur. On a small

scale, Dr. Robert Williams Wood of Johns-Hopkins had built a practical concave-mirror telescope on Long Island by rotating a basin of mercury until the liquid metal shaped itself into the proper concavity. There are limits to its use, however, according to astronomers, if the attempt is made to build the abandoned mine telescope.

The greatest telescopes now in use sometimes achieve a power of 3,000 times as great as that of the unaided vision. This is only when the state of the atmosphere is at its best. Ordinarily astronomers have to be content with much less, sometimes with a magnification of 200 or 300.

"The atmosphere fixes an outside limit of magnification," said Dr. Frank Schlessinger, director of the Yale observatory. "Limitless magnifying powers could not be used. Telescopes will probably be made larger than at present for use on mountain tops and especially favorable locations, but the tendency is to lose in distinctness as magnifying power increases. Eventually the object gazed on becomes a blur, as if seen through a heat haze. Only through great instruments like that at Mount Wilson, and then only under most favorable conditions have objects magnified as much as 3,000 times been seen with an unblurred vision.

If Mars Were a Mile Away.
The mine telescope, if it met the sanguine expectation of its projector, would magnify 25,000,000 times, which would bring Mars optically within a mile and a half of the earth. At first thought this would seem to give the astronomer a sight of Mars equivalent to that which an air pilot obtains of the earth as he flies a mile and a half above it. At that height an airman could see cities, towns and individual buildings, farms, orchards and a thousand marks of the activity of man. Under the same advantage an astronomer would soon know all about Mars, where the creations of intelligent beings are believed to exist on a much grander scale than on earth.

But here a difficulty arises. The airman is unconscious of the rotation of the earth, because gravity pulls the earth and air and the airplane with a uniform motion. On the other hand, if Mars were brought within a mile and a half of the earth it would be whirling so rapidly that the features of the landscape would be lost to the eye, as are markings on the propellers of an airplane revolving at full speed.

If a magnification of 25,000,000 times or anything like it could be accomplished the observer could only see a small patch of Mars. Mars rotates its 12,000-mile circumference once in a little more than 24 hours, so that at its equator it is making a speed of about ten miles a minute, or about five times the speed of a racing car. If the observers were content with seeing Mars 15 miles off, the portion visible to them would still be streaming past the telescope at the rate of a mile a minute.

A camera of instantaneous action might take pictures at this speed on earth, but it could not be made on Mars. A magnification of 25,000,000 times would mean that the light of Mars would be diluted to one twenty-five-millionth part of its brightness in the sky, which would not be adequate for rapid-fire photography or even for ordinary vision.

WIRE HOLDS MILLION VOLTS

Electrical Pressure Secured for First Time Carries Current 1,000 Miles.

Pittsfield, Mass.—At the Pittsfield plant of the General Electric company, for the first time in history, the tremendously high voltage of 1,000,000 volts was obtained, generated and transmitted by engineers of the company, working under the direction of the chief engineers of the plant. The pressure will carry electricity 1,000 miles.

Officials said that much valuable data were gathered indicating the commercial possibilities of such a high voltage. An official statement said: "The pressure of 1,000,000 volts and over was generated by transformer equipment designed along standard lines, with a current at ordinary household frequency of sixty cycles per second. The physical laws applying to the behavior of high voltages were found to hold good at this enormous pressure."

City Gets Big Fund.

Manchester, England.—A pageant parade brought in \$25,000 for the benefit of Mezieres, France, which has been adopted by Manchester. The rebuilt French city is dedicating a street to Manchester in return.

Huge Buck Deer Attacks an Auto

Pittsfield, Mass.—With both headlights smashed and the mudguards of his automobile bent, Walter C. Rochelo of this city says his car was attacked by a great buck, estimated to weigh 400 pounds. Rochelo was proceeding toward Pittsfield when he saw the herd of deer in the road. Four bucks and three does jumped to one side, but the leader snorted and with horns lowered, leaped at the auto, which was going slowly. The impact stopped the touring car and stunned the buck.

ON THE MAKING OF MATCHES

Chinese Factories Now Are Producing
Thousands of Tons, to the Great
Alarm of Japan.

There is a joy in considering the old verse which told of fleas having other fleas upon their backs to bite 'em, the process continuing ad infinitum. Because out of the Far East comes the interesting intelligence that the Chinese have gone into the manufacturing of matches, and are so diligent and skillful in the business, that the Japanese trade is becoming fearful of their progress, as competitors, the Cincinnati Enquirer states.

Not so long ago the American markets were flooded with cheaper imitations of the cheap Swedish matches, which compete with the sturdier and more dependable flame-makers turned out as profusely in America. It was not thought that there could be made anything worse than the Scandinavian product, but when the Japanese fraud arrived, this view was revised sharply.

If it is possible that the Chinese have been able to make the matches at a lower cost than their Japanese rivals, then indeed they have accomplished the miraculous, and the world will applaud them for the feat. Apparently success has come to them, four large factories at Tien-tsin being needed to supply the demand, which is measured by the thousands of tons. If they are being shipped to this country, as undoubtedly they will be, it is to be hoped that the triumph over the low-grade Japanese imitation of the erratic and undependable Swedish splint has not been effected through the sacrifice of efficiency in striking fire and holding it. Nothing could be worse.

NEW WAY TO FOIL ROBBERS

Hard to Get Away With Satchel That Is Equipped With a Powerful Alarm Gong.

Holdup men who have been specializing in the robbery of bank messengers and pay-roll carriers will not rejoice in the invention of the latest security satchel, designed, as it is, to prevent their silent getaway, says the Scientific American. The satchel is ordinary enough in appearance, save that it is of steel. In the lid it carries a monster bell, operated by two dry cells, which are capable of ringing the alarm continuously for six hours. The switch is hidden in the grip handle and has two buttons so arranged that when the messenger discovers that he is being held up he can instantly push one of them.

The alarm will go off and stay off, and can be heard for a distance of half a mile. The second button is for previous adjustment, and leads to a delayed action that holds the ringing up for ten or twenty seconds—enough to enable the messenger to make his getaway from the immediate range of the holdup man before the latter discovers what he is up against.

We must agree with the inventor that no crook is likely to march through the streets carrying a ringing satchel, or to get very far with it if he attempts it.

Certainly, until the stick-up artists learn how to put the muffer on the bell instantly and permanently, the new trick ought to be effective. And that is all that could be asked, for the man who is coping with a robber must expect to change his plan of campaign as fast as the thief learns what it is.

Trackless Trolley Abroad.

From a German periodical, Elektrotechnische und Maschinenbau, we learn that electrically-driven buses connect Vienna with a suburb a short distance away. These trackless trolleys run on pneumatic tires and are fed from a double trolley line on which rolls a small contact-making carriage, connected with a flexible cable to the car. The length of this cable can be varied, as its end is wound around a take-up drum. Approaching cars have to stop when passing each other, exchange their cables and proceed again. The cars are driven by two motors, built into the rear wheels. They are multipolar, slow-speed, direct current 550-volt motors, transmitting their power directly without any gears. The buses accommodate 24 passengers, but can carry as many as 40.—Scientific American.

Something to Fall Back On.

Little Owen lived near a southern Indiana town where a hub factory had just been built. The new industry had just caused a great deal of discussion among his elders as to increased property values, sale of timber and opportunities for employment. Owen one day went across the sunny fields and up a hill to the old farmhouse where his great-grandfather was spending the summer afternoon on the wide porch. A short time afterward an aunt, listening to the conversation between the two, heard the following:

"Owen, what are you going to do when you're a man?"

"Well, I guess I'll be a preacher or maybe a teacher. When I'm not preaching or teaching I guess I'll work at the hub factory."

Wanted the Best.

"I want you to teach my son a foreign language," said a lady to a teacher of languages. "What shall it be, madam?" the teacher replied. "Would you like Polish, Czechoslovakian, Armenian, or perhaps even Arabic?" "Well," mused the lady, "which is the most foreign?"—Houston Post.

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